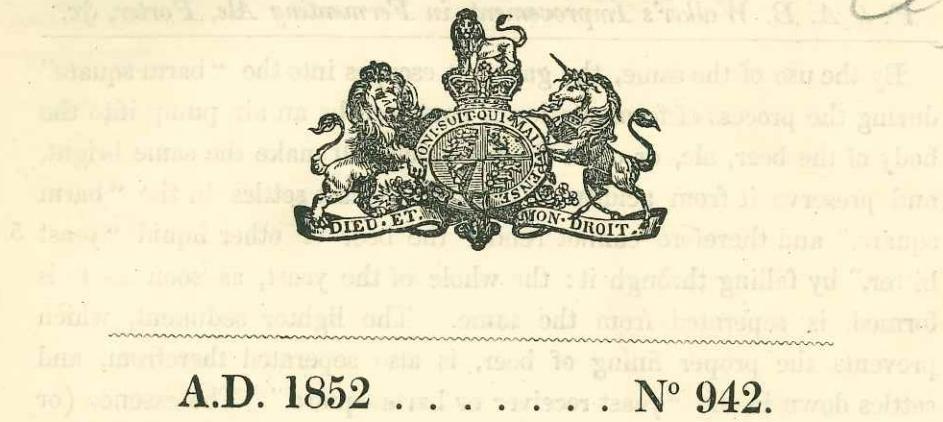


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A.D. 1852 . . . . . N° 942.

**Fermenting Ale, Porter, and other Liquids.**

**LETTERS PATENT** to Peter Walker and Andrew Barclay Walker,  
of King Street, Warrington, in the County of Lancaster, Brewers,  
for the Invention of "**IMPROVEMENTS IN FERMENTING ALE AND PORTER  
AND OTHER LIQUIDS.**"

Sealed the 17th May 1853, and dated the 3rd December 1852.

**PROVISIONAL SPECIFICATION** left by the said Peter Walker and Andrew Barclay Walker at the Office of the Commissioners of Patents, with their Petition, on the 3rd December 1852.

We, PETER WALKER and ANDREW BARCLAY WALKER, of King Street,  
5 Warrington, in the County of Lancaster, Brewers, do hereby declare  
the nature of the said Invention for "**IMPROVEMENTS IN FERMENTING ALE  
AND PORTER AND OTHER LIQUIDS**" to be as follows:—

The processes of fermentation and cleansing are "close," and are to be carried on in the same "gyle tun." The arrangement of apparatus 10 to be used is illustrated in the annexed drawings.

*P. & A. B. Walker's Improvements in Fermenting Ale, Porter, &c.*

By the use of the same, the gas that escapes into the "barm square" during the process of fermentation is conveyed by an air pump into the body of the beer, ale, or other liquid, which will make the same bright, and preserve it from acidity. The heavy yeast settles in the "barm square," and therefore cannot render the beer or other liquid "yeast 5 bitter," by falling through it: the whole of the yeast, as soon as it is formed, is separated from the same. The lighter sediment, which prevents the proper fining of beer, is also separated therefrom, and settles down in the "yeast receiver or barm square." The essence (or chief fermentable matter) of the yeast is returned from the barm square 10 to the beer or liquid, until the attenuation is complete.

The process occupies a few days, and the beer will then be fine and quite ready for consumption, and may be turned from the same gyle tun. The apparatus may be applied to any quantity of beer or liquid, and instead of the application of the air pump, other 15 suitable apparatus or arrangement may be used for effecting the same purpose.

**SPECIFICATION** in pursuance of the conditions of the Letters Patent,

filed by the said Peter Walker and Andrew Barclay Walker, in the Great Seal Patent Office, on the 3rd June 1853. 20

**TO ALL TO WHOM THESE PRESENTS SHALL COME**, we, PETER WALKER and ANDREW BARCLAY WALKER, of King Street, Warrington, in the County of Lancaster, Brewers, send greeting.

**WHEREAS** Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Third day of December, in the year 25 of our Lord One thousand eight hundred and fifty-two, in the sixteenth year of Her reign, did, for Herself, Her heirs and successors, give and grant unto us, the said Peter Walker and Andrew Barclay Walker, Her special licence that we, the said Peter Walker and Andrew Barclay Walker, our executors, administrators, and assigns, 30 or such others as we, the said Peter Walker and Andrew Barclay Walker, our executors, administrators, and assigns, should at any time

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agree with, and no others, from time to time and at all times thereafter during the term therein expressed, should and lawfully might make, use, exercise, and vend, within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "IMPROVEMENTS IN FERMENTING ALE AND PORTER AND OTHER LIQUIDS," upon the condition (amongst others) that we, the said Peter Walker and Andrew Barclay Walker, by an instrument in writing under our hands and seals, or under the hand and seal of either of us, should particularly describe and ascertain the nature of the said Invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said Letters Patent.

NOW KNOW YE, that we, the said Peter Walker and Andrew Barclay Walker, do hereby declare the nature of our said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement (that is to say) :

Our Invention consists, first, in improvements in fermenting ale, porter, and other liquors, whereby the yeast or barm is effectually separated from the liquid during the fermentation; and, secondly, in collecting or condensing the gas or vapour rising from the liquid during the process of fermentation, and reconveying the same into the ale, porter, or other liquid under operation. And in order that our Invention may be fully understood and readily carried into effect, we will proceed to describe the means pursued by us, reference being had to the annexed drawings, and to the letters and figures marked thereon.

## DESCRIPTION OF THE DRAWINGS.

Figure 1, represents an elevation, partly in section, of our improved apparatus, to be used in fermenting ale, porter, and other liquids. Figure 2, is a sectional side elevation of the same; and Figure 3, is a plan view of part of the same. The drawings are made to a scale of three quarters of an inch to a foot, but the size and the shape of the apparatus may be varied according to circumstances. *a*, is the gyle

*P. & A. B. Walker's Improvements in Fermenting Ale, Porter, &c.*

tun or vessel containing the liquid to be fermented, from the lid of which rises the pipe *b*, furnished near its upper end with a spout *c*, which opens into the yeast or barm chamber *d*. Near the centre of the bottom of the chamber *d*, is a valve *f*, by which the opening of the pipe *g*, can be closed when required; this pipe forms a communication 5 between the yeast chamber *d*, to the under side of which it is fixed, and the bottom of the gyle tun *a*, as seen best in Figure 2. The large pipe marked *h*, placed within the yeast chamber *d*, and supported by brackets from its lid, is for the purpose of condensing the gases rising from the liquid during the process of fermentation. We prefer to make 10 the pipe *h*, of tinned copper; and in order to increase its condensing powers, a current of cold water is occasionally caused to run through it, the supply of water being admitted at the pipe *i*, and the overflow running off at *j*. The coil of pipe marked *k*, placed within the gyle tun, is also supplied with an occasional current of cold water, in order 15 to be able to regulate the temperature of the liquid while undergoing the process of fermentation, in the same manner as has hitherto been customary in fermenting liquids in open chambers or vessels.

The mode of operation is as follows:—The malt liquor is conveyed by suitable pipes or troughs from the cooler into the barm chamber *d*, 20 and runs into the gyle tun *a*, through the pipe *g*. The supply from the cooler must be continued until the gyle tun is completely filled, and until the malt liquor stands a few inches deep in the barm or yeast chamber *d*; the supply is then shut off; and the valve *f*, being open, the process of fermentation is allowed to proceed, the yeast or 25 barm rising from the liquid in the gyle tun (the roof or lid of which is in a slanting direction, in order to facilitate its escape,) ascends the pipe *b*, and overflows from the spout *c*, into the chamber *d*, as shewn in Figure 2; at the same time, the deficiency in the contents of the gyle tun is replaced from the liquor in the barm chamber *d*, through the 30 pipe *g*. The fermentation and consequent cleansing of the liquor proceeds thus without intermission, until the yeast ceases to flow from the spout *c*, or until the brewer considers the liquor sufficiently cleansed. During the process of fermentation, the lids of the chamber *d*, must be kept closed, to prevent the escape of the gas which rises from the 35

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liquid to the upper part of the chamber *d*, and is there condensed by coming in contact with the cool surface of the pipe *h*, and trickles down again into the liquor, thereby assisting to make the same bright and preserving it from acidity. We would remark here that an air pump 5 may be used in place of the pipe *h*, for the purpose of collecting the gas rising from the liquid, and for forcing the same again into the ale, porter, or other liquor that is undergoing the process of fermentation. The brewer is enabled to keep the liquor in the gyle tun at its proper temperature, by means of the refrigerator or coil of pipes *k*, which are 10 kept constantly filled with cold water supplied through the pipe *l*, and let off at *m*, in the usual manner. The thermometer for ascertaining the temperature of the liquor is lowered into the gyle tun by a string, through the pipe *b*; and if the temperature is found too great, the brewer, by turning the tap *k<sup>1</sup>*, admits fresh water into the refrigerator, 15 the current through which is kept up until the required temperature is obtained. When the fermentation is completed, the brewer closes the valve *f*, which is suspended to a cord passing over the pulley *f<sup>1</sup>*, and the ale, porter, or other liquid in the chamber *d*, is run off into a suitable receptacle through the tap *p*. When the liquid is removed, the tap *p*, is 20 closed, and the yeast is cleared out through a bung hole also provided in the bottom of the yeast chamber. The ale, porter, or other liquid in the gyle tun is then racked off into barrels or casks through the tap *o*, being in a fit state for immediate consumption.

Having now described the nature of our Invention, and the manner 25 in which the same is to be performed, we wish it to be understood that we do not limit ourselves to the shape or dimension of the various parts forming the apparatus herein-before described; nor do we claim the ascending and descending tubes by which the yeast is allowed to work itself clear of the liquor undergoing the process of fermentation. 30 But what we do claim is, first, the improvements in fermenting ale, porter, and other liquids, whereby large quantities of the same are allowed to work off the yeast, as herein-before shewn and described; and, secondly, we claim the improved apparatus, as shewn and as described, for condensing or collecting the gases rising from the liquid,

*P. & A. B. Walker's Improvements in Fermenting Ale, Porter, &c.*

and converting the said gases into liquid, to be again incorporated with the ale, porter, or other liquid under fermentation.

In witness whereof, we, the said Peter Walker and Andrew Barclay Walker, have hereunto set our hands and seals, this Second day of June, One thousand eight hundred and fifty-<sup>5</sup> three.

PETER WALKER. (L.S.)

ANDREW BARCLAY WALKER. (L.S.)

LONDON:

Printed by GEORGE EDWARD EYRE and WILLIAM SPOTTISWOODE,

Printers to the Queen's most Excellent Majesty. 1853.

195. SHEET

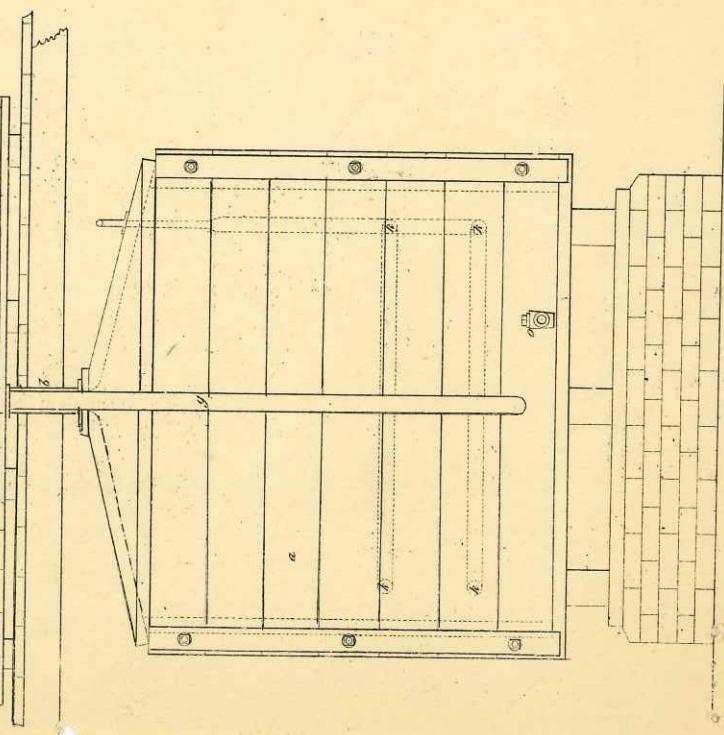
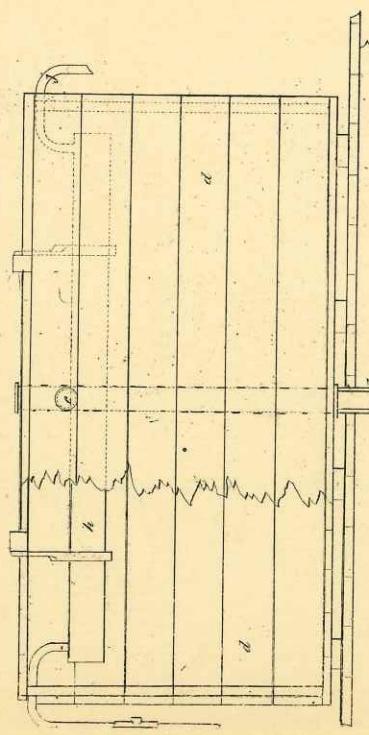
British Patent

Fermenting-  
Apparatus-  
Vats.

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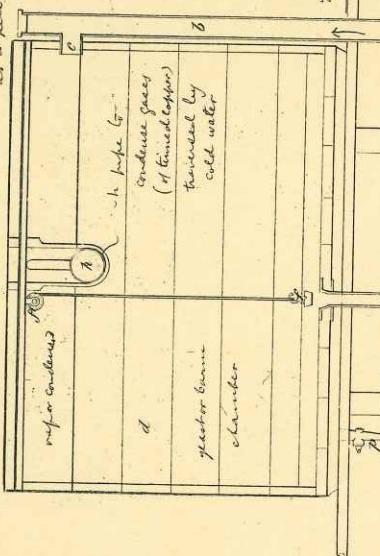
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Fig. 1.



small diagram

Fig. 2. under fig. 1, shows its  
construction as follows &  
is filled as  
yeast or barm as acid  
passes through 3



fermenter  
indirect  
method

yeast or barm as acid  
passes through 3

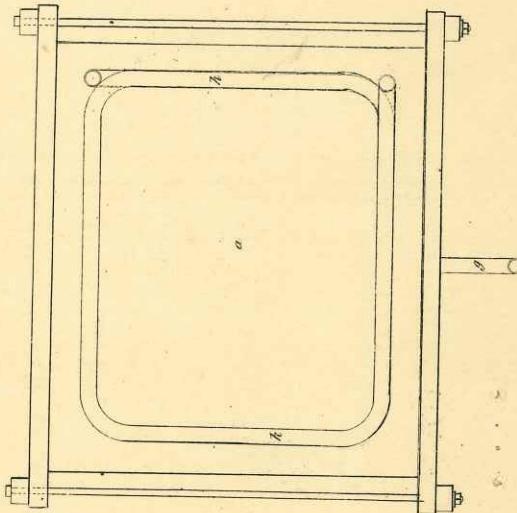
cycle tank

acoustic current  
in all walls

cycle tank

cycle tank

Fig. 3.



195. ALCOHOL.

## Fermentation

## Apparatus- Vats.

*British Patent*

A.D. 1852 DEC. 3. N<sup>o</sup> 942.

**& A.B. WALKERS, PROVISIONAL SPECIFICATION**

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